

## ENERGY CONVERSION

The requirements for Energy Conversion Systems applicable to Agency problems are unique in all of Government. Due to the necessity for concealment, low detectability, long service life, and unusual geometries, developments tailored to clandestine programs are highly specialized. These constraints necessitate an unusually active effort in this program area compared to other Government groups more able to utilize existing technologies.

The Office of Research and Development is pursuing developments in Energy Conversion within four major areas; they are Chemical, Nuclear, Environmental, and Mechanical Energy Conversion. The goals and planned programs within these areas are tailored to solve existing problems wherever possible; however, in some cases the emphasis is more toward the solution of expected future requirements.

25X1A3b A heavy commitment has been made to the field use of nuclear power systems to obtain the extended lifetimes that are theoretically possible from such a power source. To this end, [REDACTED] has already been developed. During FY 74 several programs will be undertaken to improve and advance this technology. Specific efforts will be directed at improved conversion efficiency through thermoelectric materials developments; extremely small size configurations will be fabricated to ease concealment problems; results of a special study extending useful service life to tens of years will be incorporated in operable units.

Within the Mechanical Energy Conversion area, only one specific problem is presently contemplated. This effort will involve the development and incorporation of improvements into engine-driven electrical alternators for use in special purpose ORD delivery vehicles. The proposed improvements will enhance the vehicle versatility and alleviate constraints currently imposed by payload battery requirements.

Chemical Energy Conversion efforts will consist only of completion of the [REDACTED] effort.

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Considerable work will be done on Solar Cell Camouflage for applications to Agency problems. Significant effort is planned to make the camouflage effective in terms of:

- a. Resistance to environmental exposure.
- b. Maintenance of efficiency of energy conversion.
- c. Provide effective camouflage characteristics which make the cell array undetectable.

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